

ABSTRACT OF THE DISCLOSURE

A method of forming an isolation structure comprising forming n-type areas and/or p-type areas implanted respectively therein on a first surface of a substrate. A pad oxide film is grown on the first surface of the substrate covering the p-wells and/or n-wells. A diffusion barrier(s) is deposited on the first surface of the substrate and a second surface of the substrate to form an encapsulated structure. The encapsulated structure is annealed to activate the n-type and/or p-type areas. A mask material is applied over the diffusion barrier on the first surface of the substrate to define active device areas and a dry etch process is used to etch away the unmasked portions of the diffusion barrier. The mask material is stripped and a field oxide is grown on the first surface of the substrate. A portion of the field oxide and all of the diffusion barrier is removed, resulting in active areas surrounded by a field isolation structure.